ASTRONOMY AT THE OHIO STATE UNIVERSITY

When The Ohio State University opened its doors, there was no particular department or division to accommodate astronomy. It was considered part of the general complex of engineering and mathematics and taught as a side issue, as was common in most American universities at that time. One of the six original professors appointed to the faculty of the new university was Robert White McFarland (1825-1910), who first taught astronomy at Ohio State (in addition to being Superintendent of Grounds and Buildings). McFarland was succeeded by George Cary Comstock (1855-1934) in 1885. Comstock served as Professor of Mathematics and Astronomy until 1887, returning then to the University of Wisconsin.

The main actors in the early history of astronomy at Ohio State and the McMillin Observatory were Emerson McMillin (1844-1922), Henry Curwen Lord (1866-1925), and Julius Stone (1855-1947).

Emerson McMillin came from Ewington (Gallia County) in southern Ohio and quit school at the age of 10 to work at making charcoal ~~from~~ for iron furnaces. He evidently yearned for education and educated himself by putting in five hours of study per day (so the story goes) for 50 years. He made his fortune in gas works, first in southern Ohio and later in Columbus, and finally as a banker in New York.

Henry Curwen Lord (HCl, or hydrochloric acid, to his students) was born in Cincinnati and matriculated at OSU in 1884. While an assistant in mathematics in the Department of Civil Engineering, Lord

started agitating for an astronomical observatory on the campus. One attempt to erect an observatory was dropped in 1891 for lack of funds.

McMillin's interest in an observatory for OSU was apparently due to a chance conversation between him and Julius Stone, a Columbus industrialist, amateur astronomer, later president of the Board of Trustees of OSU, and benefactor of the University. McMillin asked Stone for an estimate of the cost of an observatory and Stone went to see Lord. In 1895, McMillin formally offered $10,000 for the equipment of an observatory, and added $5000 for the cost of the building later.

H. C. Lord was appointed director of the observatory in 1895 and work on the building began that summer. A 12 1/2-inch objective lens was purchased from Brashear and the telescope itself built by the Warner and Swasey Company in Cleveland. The formal opening of the observatory, located above Mirror Lake, took place on June 15, 1896.

It is interesting that some of the pioneering work in the measurement of radial velocities (line-of-sight velocities of the stars, detected from measurements of Doppler shifts of stellar spectrum lines) was carried out by Lord with the McMillin 12 1/2-inch telescope during its early history.

Edmund S. Manson succeeded Lord in 1922 as director of the McMillin Observatory, a position he held until 1946. Manson's principal contributions to astronomical research were in classical astronomy, particularly in the observation of asteroids and satellites, and in celestial mechanics.

Manson, in turn, was succeeded by J. Allen Hynek in 1946, who was director of the observatory until 1956 when he accepted a position with the Smithsonian Astrophysical Observatory. Hynek's research interests were particularly in stellar spectroscopy and the study of binary stars.

While the McMillin Observatory was the focus of astronomy on the Ohio State campus, interesting astronomical developments were taking place at Ohio Wesleyan University, 20 miles to the north of OSU. Astronomy had been taught at Ohio Wesleyan since 1857 by Hiram Perkins (1833-1924), who was advanced to Professor of Mathematics and Astronomy in 1867, a title he held until his retirement in 1907. Having laid the foundations for a fortune supplying meat from his father's farm to the Federal ~~Agency~~ Army, Perkins dreamed of building a large telescope for Ohio Wesleyan University. He ultimately left over $200,000., to which Ohio Wesleyan added another $100,000 to build a 69-inch reflecting telescope and observatory building, located a few miles south of Delaware just off U.S. 23.

The Perkins telescope, third largest in the U.S. at that time, was completed in 1931. Ground was broken for the new observatory in 1923 by Perkins himself, the year before his death. The telescope mounting was built by the Warner and Swasey Company and the 69-inch mirror was cast at the U.S. Bureau of Standards, the first large glass disk successfully cast in the United States, and figured by the Fecker Company of Pittsburgh.

The first director of the Perkins Observatory was Clifford C. Crump (Ph.D., U. of Michigan, 1916), who was a close friend of the Perkins family, and was largely responsible for the original planning and design of the telescope and observatory. Crump left Ohio Wesleyan University in 1928, before the completion of the telescope, and was succeeded as director by Harlan T. Stetson. Stetson, who came to Ohio from Harvard, was a specialist in sunspots and solar-terrestrial relationships. He returned to the East in 1934, when Nicholas T. Bobrovnikoff was appointed director of the Perkins Observatory.

Meanwhile, the financial depression was deepening, funds for the observatory were becoming scarce, and the Trustees of Ohio Wesleyan University were forced to re-examine the status of the Perkins Observatory. They had built a great research plant at a cost of some $300,000. Its location off the main campus and outside the city made necessary the constant supervision of a caretaker and the maintenance of a separate heating plant. A skilled mechanic was required to keep the various units of complicated machinery in good working order. Insurance and electric power were costly. If the telescope was to be used to full advantage a staff of astronomers was vital. Much expensive auxiliary equipment was needed. The total cost of maintenance was far out of normal proportion for an institution whose primary purpose was the training of undergraduate students. Even had there been no depression, this problem would have arisen at some time. Director Bobrovnikoff and Ohio Wesleyan President Edmund D. Soper undertook a study of the situation with a view to its improvement.

It was evident that outside aid was imperative. The most logical place to seek such aid was on the campus of Ohio State University located only seventeen miles south of the observatory. Ohio State had developed into one of the largest and finest universities in the United States. It had a large graduate school, and it was able to give considerable attention to scientific research. President George W. Rightmire, Professor Alpheus W. Smith, Chairman of the Department of Physics and Astronomy, and Julius F. Stone, Trustee, looked with interest upon the observatory and welcomed the opportunity of participating in its use. After all details of the cooperative plan had been worked out, the Presidents of Ohio Wesleyan and Ohio State Universities and the Chairmen of their Board of Trustees met on May 16, 1935, to sign the Memorandum of Agreement.

According to the Agreement, Ohio State leases and staffs the Perkins Observatory while Ohio Wesleyan retains ownership. This arrangement has worked to the satisfaction of both universities during the years and provides a fine example of successful and effective cooperation.

Meanwhile, research interests became broader and the astronomy staff increased. Geoffrey Keller became director of the Perkins Observatory in 1953, a position he held until 1959 when he left to take a position with the National Science Foundation. It is interesting to note that Keller returned to the Ohio State University in 1968 as Dean of the College of Mathematics and Physical Sciences.

Perhaps the most aggravating factor from the research point of view during those years of growth was the generally poor weather for observing in Ohio (and the middle west, in general). Only about a third of the night-time hours could be used, and these were seldom of truly photometric quality. Weather studies showed that if it were relocated in the southwestern United States, with very fine observing conditions, the Perkins reflector could be more than twice as effective.

In August, 1957, the two university presidents, Arthur S. Flemming (Ohio Wesleyan) and Novice G. Fawcett (Ohio State) met at the observatory with Roger L. Putnam, the sole trustee of Lowell Observatory. Also present were director Geoffrey Keller and John S. Hall, the future director at Lowell. Further study led to an agreement that was signed in October, 1959: ownership of telescope and its accessories remains with Ohio Wesleyan; Lowell Observatory was to finance transfer of the telescope to Flagstaff, Arizona, and build suitable housing for it; Lowell also has maintenance responsibility, but observing time is equally divided between the Perkins and Lowell astronomers.

With the support of the National Science Foundation, a building and dome were erected on Anderson Mesa, 10 miles southeast of Flagstaff, and the telescope was moved in June, 1961. Observing began that December. Back in Ohio, a 32-inch Cassegrain reflector was installed in the old 69-inch dome, while a separate building was erected nearby for a 16-24-inch Schmidt telescope. These instruments were donated by the Schottland family of Martinsville, Virginia.

Then it became more and more apparent that the 69-inch mirror of borosilicate glass, when subjected to the large temperature variations of its dry Arizona environment, produced images of inferior quality. Additional aid from NSF made it possible to secure a new 72-inch mirror of low-expansion Duran 50 glass and to provide a new mirror-support system. National Science Foundation's total contribution to this project is $388,000. The cost of the transfer, modernization, new dome and substructure, has altogether been about one-fifth that of a completely new telescope of the same aperture. Furthermore, we now have a very effective cooperative arrangement between Perkins and Lowell Observatories. It involves mutual use of equipment and facilities in addition to the 72-inch instrument, and promises to continue for many years to come.

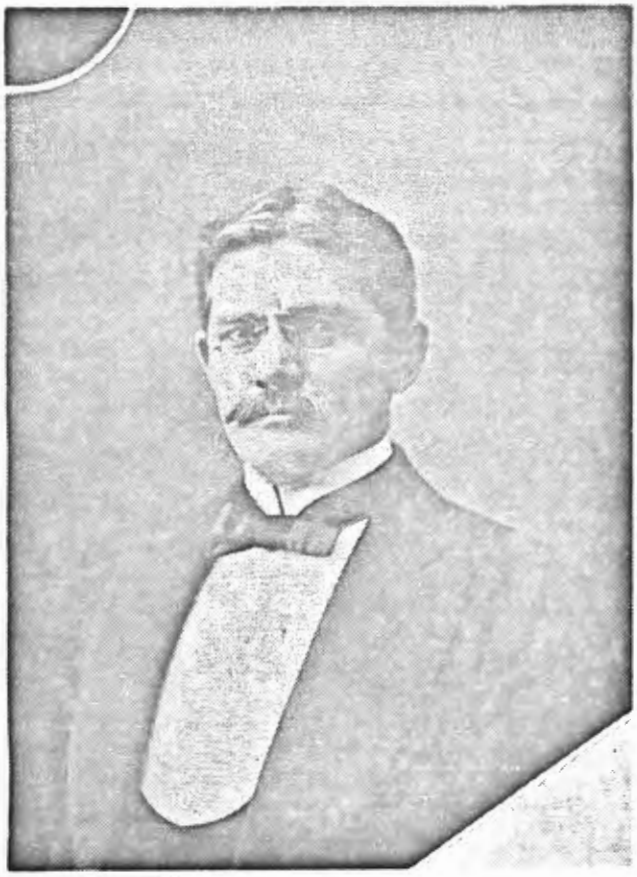
Arne Slettebak became director of the Perkins Observatory in 1959 and chairman of the newly-created Department of Astronomy at the Ohio State University in 1961. The staff and graduate program continued to grow and the McMillin Observatory on the Ohio State campus had long since become too small for the total astronomy program. In 1968, the Department of Astronomy moved into the new wing of the Physics Building, where it occupies the fifth floor and roof. The new quarters provide enlarged space with modern facilities, including a new planetarium, telescopes, and other auxiliary equipment.

As we go into the Centennial Year, the Department of Astronomy has ten full-time faculty members plus three radio astronomers who hold appointments in the Astronomy Department as well as the Department of Electrical Engineering. Over 1000 students now take astronomy courses each year, most of these at the elementary level. The number of undergraduates majoring in astronomy at any one time has been about 25 during recent years, and this is also about the number of graduate students. A total of 32 students have been awarded the M.S. degree in astronomy at OSU and eight students have been awarded the Ph.D. degree. Of these eight, seven received their degrees during the past three years.

Research programs have also expanded with the growth of the staff and graduate program. Relocation of the Perkins 72-inch telescope to Arizona has permitted the introduction of photometric observing programs which were impossible under Ohio skies, as well as increasing the efficiency of spectroscopic research. In addition to observing programs in Arizona and Delaware, designed to increase our knowledge of the atmospheres of the stars and the manner in which stars evolve, research programs in theoretical astrophysics and laboratory astrophysics have also been undertaken by various staff members. Radio astronomical research is carried out by Dr. Kraus and his colleagues in the Department of Electrical Engineering, who hold joint appointments in the Department of Astronomy. An important addition was made this year when the six research astronomers of the Lowell Observatory were appointed Adjunct Professors at the Ohio State University. These scientists are now

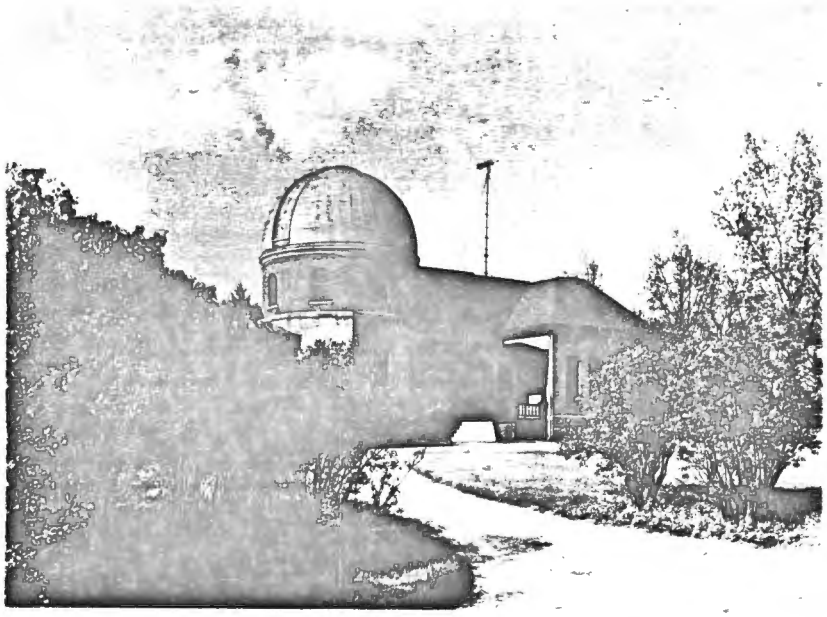
available to help our advanced graduate students in their dissertation research in Arizona, and will also be available to visit the Ohio State campus from time to time to present courses in their research specialties.

Arne Slettebak
September 29, 1969



Emerson McMillin
1897

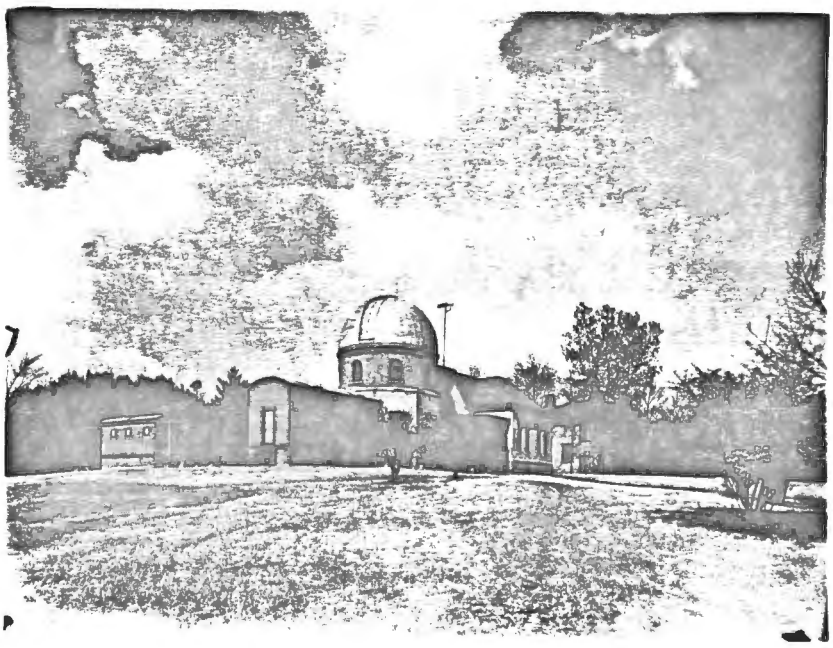
Hiram Perkins



1904

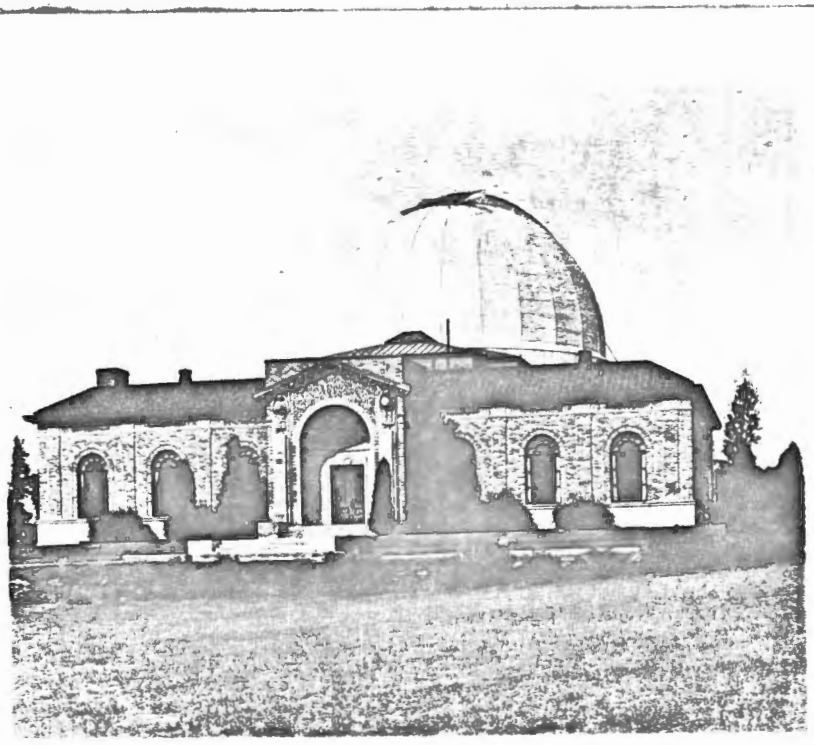
McMillin Observatory

1905

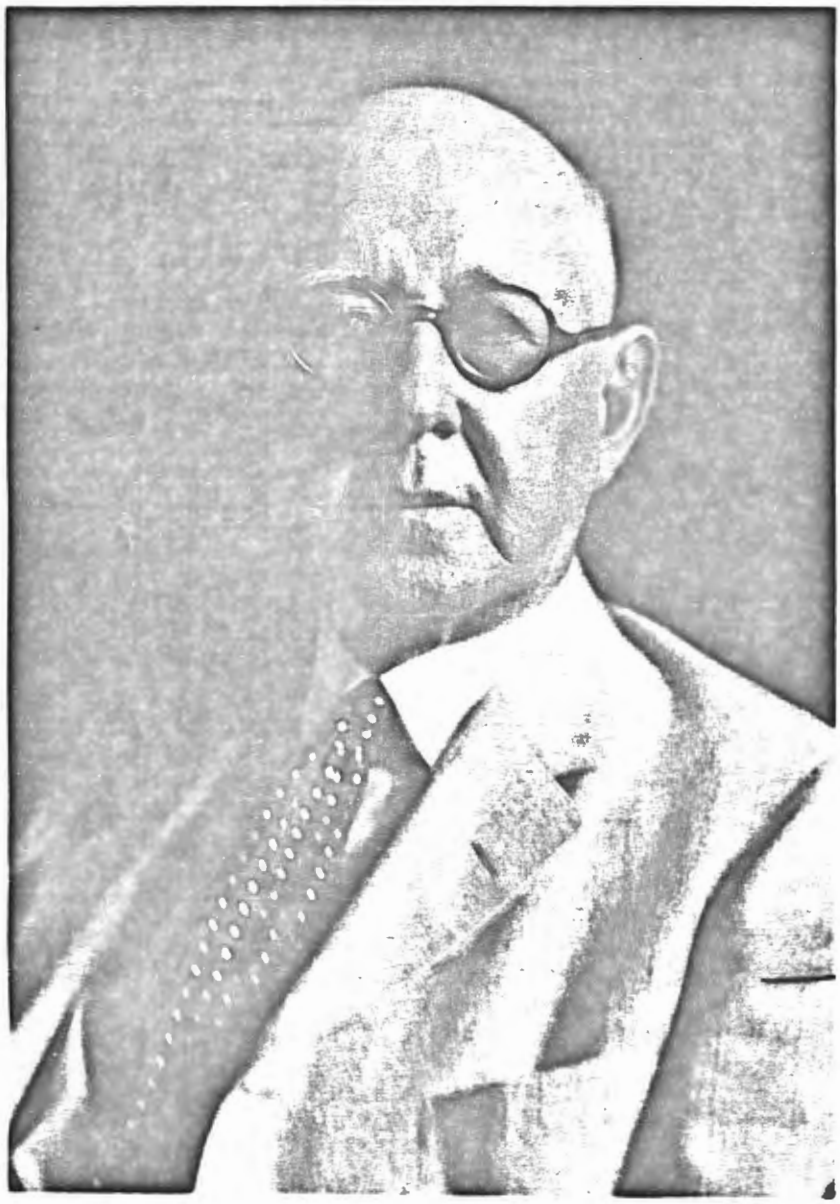


McMillin Equatorial Telescope
1897

Groundbreaking for the Perkins Observatory



Perkins Observatory
1935

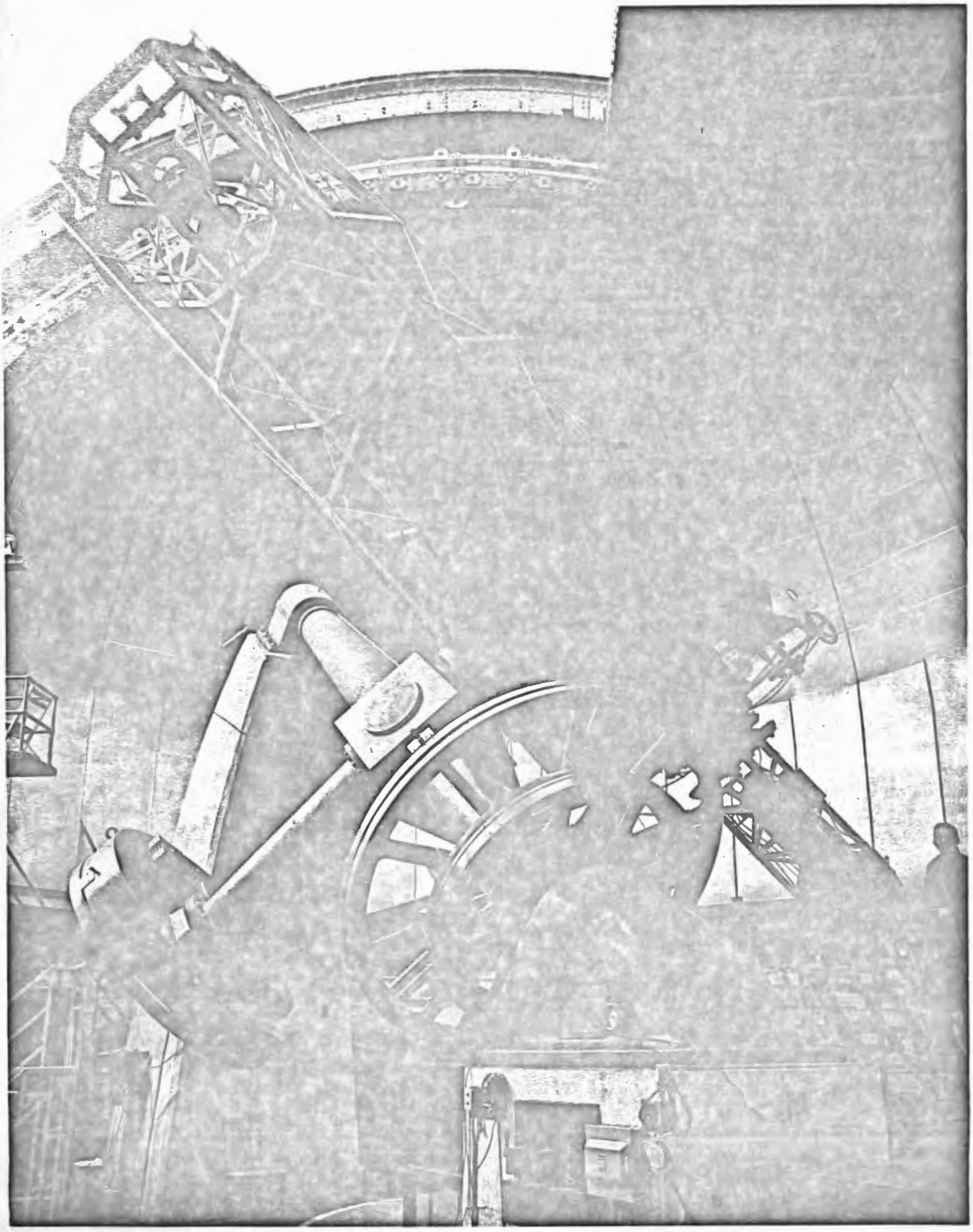


Julius F. Stone
1928

Henry C. Lord
1918

N. T. Bobrovnikoff
1940

J. Allen Hynik
1963



Perkins 69 inch Telescope
1960